

WHAT IS CLAIMED IS:

1. A double feed detection method for detecting whether sheet materials are double fed or not, comprising the steps of:

5 applying an external force to a sheet material; detecting a force obtained from the sheet material depending on the application of the external force, by a detector; and determining whether the sheet materials are
10 double fed or not based on a signal obtained from the detector.

2. The double feed detection method according to claim 1, wherein the external force is applied by
15 bringing an external force application means into contact with the sheet material from a non-contact state between the external force application means and the sheet material.

20 3. The double feed detection method according to claim 1, wherein the external force is applied to the sheet material from a contact state between an external force application means and the sheet material.

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4. The double feed detection method according to claim 1, wherein when the external force is

applied, a distance between an external force application means and the detector changes.

5. The double feed detection method according
5 to claim 1, wherein the external force is applied in
a state where the sheet material is standing still.

6. The double feed detection method according
to claim 1, wherein the external force is applied in
10 a state where the sheet material is being conveyed.

7. The double feed detection method according
to claim 1, wherein double feed is determined based
on a voltage value of a voltage peak of a signal
15 detected by the detector depending on the application
of the external force.

8. The double feed detection method according
to claim 1, wherein double feed is determined from
20 frequency components of vibration detected by the
detector depending on the application of the external
force.

9. The double feed detection method according
25 to claim 1, wherein when the external force is an
impact applied by an impact applicator, double feed
is determined from an interval between a plurality of

peaks of voltage generated from the detector by several times of recoil of the impact applicator.

10. The double feed detection method according
5 to claim 1, wherein the external force is an impact.

11. The double feed detection method according to claim 1, wherein the external force is a vibration.

10 12. A double feed detection apparatus comprising:

 external force application means for applying an external force to a sheet material; and
 detection means for detecting a force obtained
15 from the sheet material when said external force application means applies the external force to the sheet material.

13. An image forming apparatus comprising a
20 double feed detection apparatus according to claim 12 and an image forming unit.

14. An image reading apparatus comprising a
 double feed detection apparatus according to claim 12
25 and an image reading unit.